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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,926	04/14/2004	Hideharu Tajima	61,144 (70904)	7906

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EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, MA 02205

EXAMINER	
SHEN, KEZHEN	
ART UNIT	**PAPER NUMBER**
2609	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/824,926	TAJIMA ET AL.	
	Examiner	Art Unit	
	Kezhen Shen	~~2627~~ 2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: (taken from US Pub 2004/0240374 A1)

For example:

Section [0055], replace "laser bean" to "laser beam"; It is incumbent upon the applicant to review the entire specification to ensure that similar problems are corrected since only the exemplary are contemplated.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant states "that surface" with no reference to which surface. Appropriate correction is required.

3. Claims 5 and 6 recite the limitation "functional layer" in regard to claim 1, however claim 1 does not disclose a "functional layer". There is insufficient antecedent basis for this limitation in the claim. To correct this, the applicant is suggested to amend claims 5 and 6 to depend on claim 2.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-7, 9-11 and 14-18 are rejected under 35 U.S.C. 102(b) as being unpatentable by Tominaga et al. 5,569,517.

Regarding claim 1, Tominaga et al. teach an optical data recording medium (Fig. 1), in which irradiation of a light beam is used for recoding or reproducing data (Reading Light of Fig. 1, Col 4, Lines 48-50 laser beam focused on an area to be recorded), comprising of a substrate (Fig. 2/ item 10, Col 4, Lines 23-25 a protective layer), and a reproducing layer (Fig. 2/item 31, Col 4, Lines 22-25 lower dielectric layer), provided to face a light-incident surface of the substrate (Fig. 2/ items 10 & 31), the reproducing layer for reproduction of a signal from a mark having a mark length shorter than a resolution limit of an optical system of a reproducing apparatus for reproducing the optical data recording medium (Col 1 Line 36-38 super-resolution).

Regarding claim 2, Tominaga et al. teach the optical data recording medium as set forth in claim 1, said substrate having a rise and/or a recess that contributes recording (Fig.2/ items 10 and 21 item 21, Col 4 Line 18-22 pits formed on one surface for carrying information) and/or reproduction on the light incident surface of the substrate (of Fig. 2) said optical data recording medium, further comprising: a functional

layer (items 4 and 32 of Fig. 2, Col 4 Lines 32-35 reflective layer is interposed between the light transmittance control layer and the protective layer), provided on a light-incident surface of the substrate (items 10, 4 and 32 of Fig 2), the functional layer for assisting the recording and reproducing of data, and, said reproducing layer being provided on a surface of the functional layer (items 10 and 32 of Fig. 2), and having a transmittance that changes in accordance with a light intensity distribution of the light beam (Fig. 6 the transmittance changes with regard to temperature which is affected by the light beam, Col 2, Lines 52-57 mask layer undergoes a crystal to crystal transition upon irradiation of reading light to introduce a change in the reflectance of reading light).

Regarding claim 3, Tominaga et al. teach the optical data recording medium as set forth in claim 1, wherein: the reproducing layer is made of a material whose transmittance changes in accordance with to temperature (Fig. 6 the transmittance changes with regard to temperature which is affected by the light beam, Col 2 Line 52-57 mask layer undergoes a crystal to crystal transition upon irradiation of reading light to introduce a change in the reflectance of reading light).

Regarding claim 6, Tominaga et al. teach the optical data recording medium as set forth in claim 1 wherein: the functional layer is a reflective layer (4 of Fig. 2, Col 4 Line 32-35 reflective layer) for reflecting the light beam (Col 7 Line 60-65 the reflecting layer is provided of the purpose of increasing the quantity of reflected light form the medium), the reflective layer being provided between the substrate and the reproducing layer (items 4, 10 and 32 of Fig. 2, Col 4, Lines 32-35 reflective layer is interposed between the light transmittance control layer and the protective layer).

Regarding claim 7, Tominaga et al. The optical data recording medium as set forth in claim 1 wherein: the reproducing layer is made of a metal oxide (Col 7, Lines 49-55 show the . exemplary dielectric materials include SiO_2, mixtures of SiO_2 and ZnS).

Regarding claim 9, Tominaga et al. teach the optical data recording medium as set forth in claim 5, wherein: the light absorption layer is made of one of silicon, germanium and an alloy of silicon and germanium (Col 3, Lines 13-16 disclose the mask layer preferably tellurium and germanium as main components).

Regarding claim 10, Tominaga et al. teach an optical data recording medium (Fig. 1), in which irradiation of a light beam is used for recoding and/or reproducing data (Reading Light of Fig. 1, Col 4, Lines 48-50 laser beam focused on an area to be recorded), comprising of a substrate (item 10 of Fig. 2, Col 4, Lines 23-25 a protective layer) having a non-flat surface on which a rise and/or a recess for recording and/or reproduction is formed (item 21 of Fig.2, Col 4 Lines 18-22 pits formed on one surface for carrying information), a reproducing layer (item 31 of Fig. 2, Col 4, Lines 22-25 lower dielectric layer), provided on the non-flat surface of the substrate (items 10 and 31 of Fig. 2), the reproducing layer having a changeable transmittance with respect to the light beam (Col 2, Lines 52-57 mask layer undergoes a crystal to crystal transition upon irradiation of reading light to introduce a change in the reflectance of reading light), the changeable transmittance being changeable in accordance with intensity distribution of the light beam irradiated on the reproducing layer (Fig. 6 the transmittance changes with regard to temperature which is affected by the light beam, Col 2 Lines 52-57 mask layer undergoes a crystal to crystal transition upon irradiation of reading light to introduce a

change in the reflectance of reading light), and a reflective surface (item 4 of Fig. 2 Col. 4, Lines 32-35 reflective layer), provided between the substrate and the reproducing layer (items 4, 10 and 32 of Fig. 2, Col 4 Lines 32-35 reflective layer is interposed between the light transmittance control layer and the protective layer), for reflecting a light beam having passed through the reproducing layer (Col 7, Lines 60-65 the reflecting layer is provided of the purpose of increasing the quantity of reflected light form the medium), the reflective surface having a rise and/or a recess that corresponds to the rise and/or the recess of the substrate (item 21 of Fig. 2, Col 8, Lines 26-30 the substrate of the optical recording medium may be provided with pits for carrying read only information in addition to grooves).

Regarding claim 11, Tominaga et al. teach the optical data recording medium as set forth in claim 10, further comprising: a reflective layer provided between the substrate and the reproducing layer (items 4, 10 and 32 of Fig. 2, Col 4 Lines 32-35 reflective layer is interposed between the light transmittance control layer and the protective layer), and including the reflective surface (item 4 of Fig. 2, Col 4 Lines 32-35 reflective layer).

Regarding claim 14, Tominaga et al. teach the optical data recording medium as set forth in claim 10, wherein: the rise or the recess is formed by a guiding groove that is for guiding the light beam (Col 4 Lines 57-62 the substrate may be provided on the surface with groves or the like for tracking and addressing purposes).

Regarding claim 15, Tominaga et al. teach the optical data recording medium as set forth in claim 10, wherein: the rise or the recess is formed by a pit that is indicative of recorded data (Col 4, Lines 18-22 pits formed on one surface for carrying information).

Regarding claim 16, Tominaga et al. teach the optical data recording medium as set forth in claim 10, wherein: the rise or the recess is (i) formed by a guiding groove that is for guiding the light beam (Col 4, Lines 57-62 the substrate may be provided on the surface with groves or the like for tracking and addressing purposes) and (ii) a pit that is indicative of recorded data (Col 4 Lines 18-22 pits formed on one surface for carrying information).

Regarding claim 17, Tominaga et al. teach a reproducing method of an optical data recording medium in which irradiation of a light beam is used for reproducing data recorded in the optical recording medium (Reading Light of Fig. 1, Col 4 Lines 48-50 laser beam focused on an area to be recorded), said optical data recording medium, including: a substrate (item 10 of Fig. 2, Col 4 Lines 23-25 a protective layer), and a reproducing layer (item 31 of Fig. 2, Col 4 Lines 22-25 lower dielectric layer), provided to face a light-incident surface of the substrate (items 10 and 32 of Fig. 2), the reproducing layer for reproduction of a signal from a mark having a mark length shorter than a resolution limit of an optical system of a reproducing apparatus for the optical data recording medium (Col 1, Lines 36-38 super-resolution), said reproducing method comprising the steps of: irradiating the light beam from above the reproducing layer (Fig. 2, Col 4 Lines 39-42 reading light is irradiated to the medium), and reproducing the

mark having a mark length shorter than resolution limit of the optical system of the reproducing apparatus (Col 1 Lines 36-38 super-resolution).

Regarding claim 18, Tominaga et al. teach a reproducing method of an optical recording medium in which irradiation of a light beam is used for reproducing data recorded in the optical recording medium (Reading Light of Fig. 1, Col 4 Lines 48-50 laser beam focused on an area to be recorded), said optical recording medium including: a substrate (item 10 of Fig. 2; Col 4, Lines 23-25 a protective layer) having a non-flat surface on which a rise and/or a recess for recording and/or reproduction is formed (item 21 of Fig.2, Col 4 Lines 18-22 pits formed on one surface for carrying information), a reproducing layer (item 31 of Fig. 2, Col 4 Lines 22-25 lower dielectric layer), provided on the non-flat surface of the substrate (item 21 of Fig. 2, Col 8 Lines 26-30 the substrate of the optical recording medium may be provided with pits for carrying read only information in addition to grooves), the reproducing layer having a changeable transmittance with respect to the light beam (Col 2, Lines 52-57 mask layer undergoes a crystal to crystal transition upon irradiation of reading light to introduce a change in the reflectance of reading light, the transmittance and reflectance are inverse of each other), the changeable transmittance being changeable in accordance with intensity distribution of the light beam (Fig. 6 the transmittance changes with regard to temperature which is affected by the light beam), and a reflective surface (item 4 of Fig. 2, Col 4, Lines 32-35 reflective layer), provided between the substrate and the reproducing layer (items 4 10 and 32 of Fig. 2, Col 4, Line 32-35 reflective layer is interposed between the light transmittance control layer and the protective layer), for

reflecting a light beam having passed trough the reproducing layer (Col 7, Lines 60-65 the reflecting layer is provided of the purpose of increasing the quantity of reflected light form the medium), the reflective surface having a rise and/or a recess that corresponds to the rise and/or the recess of the substrate (item 21 of Fig. 2, Col 8, Line 26-30 the substrate of the optical recording medium may be provided with pits for carrying read only information in addition to grooves), said reproducing method comprising the step of: reproducing recording data by irradiating a light beam the optical data recording medium from above the reproducing layer (Fig. 2, Col 4 Lines 39-42 reading light is irradiated to the medium).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 4-5, 8 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tominaga et al. 5,569,517 as applied to claim 1 above, and further in view of Jung 5,516,568.

Regarding claim 4, Tominaga et al. fail to teach the optical data recording medium as set forth in claim 1 wherein: at least a part of that surface of the reproducing layer to which the light beam is irradiated is exposed to air. However, Jung does.

Jung teaches the optical data recording medium wherein at least a part of that surface of the reproducing layer to which the light beam is irradiated is exposed to air (Jung item 7 of Fig. 1, Col 4 Lines 47-48 an air layer). Therefore, taking the teachings of Tominaga et al. and Jung as a whole, one of ordinary skill in the art would be motivated to combine the teachings of an optical data recording medium and the teachings air layer for the benefit of an increase in the data density of the optical disc.

Regarding claim 5, Tominaga et al. teach the optical data recording medium as set forth in claim 1 wherein the functional layer is a light absorption layer (Tominaga et al. 33 of Fig. 2), the light absorption layer (Tominaga et al., item 33 of Fig. 2) being contiguous to the reproducing layer (Tominaga et al., item 4 of Fig. 2). However, Tominaga et al. fail to teach a light absorption layer for converting the light beam to heat. However, Jung does.

Jung teaches a light absorption layer for converting the light beam to heat (Jung Col 2 Lines 33-39 the recording or reproducing of information is effected by optical change generated when a recording laser beam is irradiated to a localized area of the

recording layer to bring out melting, vaporization, thermal deformation, thermal transfer and the like). Therefore, taking the teachings of Tominaga et al. and Jung as a whole, one of ordinary skill in the art would be motivated to combine the teachings of the light absorption layer and the teachings of using the laser beam to convert to heat for the benefit of thermal transfer for better recording or reproduction.

Regarding claim 8, Tominaga et al. fail to teach the optical data recording medium as set forth in claim 7, wherein: the reproducing layer is made of a zinc oxide. However, Jung does.

Jung teaches an optical data recording medium wherein the reproducing layer is made of a zinc oxide (Col 5 Line 24-26 the charge-transferring layer can include selenium, cadmium sulfides, zinc oxides and amorphous silicon). Therefore, taking the teachings of Tominaga et al. and Jung as a whole, one of ordinary skill in the art would be motivated to combine the teachings of the reproducing layer and the teachings of the reproducing layer to be made up of zinc oxide for the benefit of writing data in higher density.

Regarding claim 12, the limitations as claimed have been analyzed and rejected with respect to claim 5 above.

Regarding claim 13, the limitations as claimed have been analyzed and rejected with respect to claim 4 above.

Examiner's Note

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kezhen Shen whose telephone number is (571) 270-1815. The examiner can normally be reached on Monday - Friday 7:30 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571) 272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kezhen Shen/

VU LE
SUPERVISORY PATENT EXAMINER